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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,686	07/21/2003	Stephen A. Factor	EI-7597	5322

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EXAMINER

TOOMER, CEPHIA D

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 11/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/623,686

Applicant(s)

FACTOR ET AL.

Examiner

Cephia D. Toomer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 28, 2006 has been entered.
2. This Office action is in response to the Office action in which claims 1, 8, 9, 11, 14-16, 18-21 were amended.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "at least 20 ppm of the coal" in reference to the manganese compound is not supported by the original filed specification. There is only support for "about 20 ppm" manganese to the coal. See page 8, lines 6-8. This language is broader than the range recited in the specification. Applicant's upper range for the amount of added manganese compound is about 500

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ppm. The claim as written does not have an unlimited upper limit for the amount of manganese added and is therefore not supported by the specification.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 15-17 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 11/064,281. Although the conflicting claims are not identical, they are not patentably distinct from each other because the additive of the present invention is set forth with comprising language and encompasses a liquid comprising a manganese-containing compound.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claims 1-5 and 7-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-

5,7-10 and 12-21 of copending Application No. 10/623,092. Although the conflicting claims are not identical, they are not patentably distinct from each other. The preambles differ; however, since the present invention and the copending invention are using the same components in the same environment it would be reasonable to expect that there would be a reduced amount of NO<sub>x</sub> resulting from the combustion of the coal.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claims 1-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 8-11, 14-16, 18 and 20 of copending Application No. 10/852,497. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present method claims encompass a combustion chamber in which coal and oxygen are combusted.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### ***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language "about 20 ppm" is broader than "at least 20 ppm" as recited in claim 14.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-3, and 6-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Zamansky (US 6,206,685).

Zamansky teaches a method of decreasing the amount of nitrogen oxides released to the atmosphere upon the combustion of coal (see abstract). In one method the concentration of nitrogen oxides in a combustion flue gas is decreased by providing a metal-containing additive in the main combustion zone. Since NO<sub>x</sub> are reduced, the reduction of carbon in the fly ash inherently occurs. This method includes providing a main combustion zone for oxidizing a combustible fuel with an oxidizing agent, with the combustion forming a combustion flue gas that contains nitrogen oxides. A metal-containing additive is introduced into the combustion zone separately or with reagents (e.g., fuel or air), and is allowed to react within the combustion flue gas to decrease the concentration of nitrogen oxides therein. The combustion zone is adapted to oxidize a combustible fuel with an oxidizing agent, thereby generating a combustion flue gas. The combustible fuel can be coal. Similarly, the oxidizing agent can be recirculated flue gas (see col. 7, lines 16-34).

The metal-containing additive can be provided to the combustion zone in various ways. For example, the metal-containing additive can be premixed with the combustible fuel, or can be provided separately, such as by injecting directly into the combustion zone. Alternatively, the metal-containing additive can be injected into the combustion zone along with an oxidizing agent, such as an air stream. Other variations can be used as desired. For example, a portion of the metal-containing additive can be injected with the combustion fuel and another portion injected with the oxidizing agent. The metal-containing additive can be injected in one or more locations in the combustion zone, with or without the combustible fuel or oxidizing agent (see col. 8, lines 34-46). The metal containing additive may be a manganese compound either inorganic or organic (see col. 7, lines 40-53). The amount of additives in the combustion zone can be in the range of about 1 to about 10,000 ppm (see col. 8, lines 6-9).

Accordingly, Zamansky teaching all the limitations of the claims anticipates the claims.

13. Claims 1, 2, 4-11 and 13-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Kerley (US 3,927,992).

Kerley teaches a process for reducing smoke and soot (carbon) produced in the combustion of coal by adding a manganese compound such as methylcyclopentadienyl tricarbonyl in an amount from 0.005-5% (5-50,000 ppm) (see abstract; col. 1, lines 39-50; col. 3, lines 40-41; col. 4, lines 1-5). Kerley teaches that the manganese may be included in the coal, injected into the coal feed or introduced separately into the

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combustion chamber (see col. 4, lines 9-18). Kerley discusses introducing the coal into the combustion chamber by feeding the coal and manganese compound directly into a blower system (air stream) or by addition of the secondary air (see col. 4, lines 33-59). Since Kerley teaches adding the same manganese compound in the same amount to coal and combusting the mixture, it would inherently reduce the amount of NO<sub>x</sub> and CO.

Accordingly, Kerley teaching all the limitations of the claims anticipates the claims.

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. Claims 1-5, 7-9, 11 and 14-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Aradi (US 20040118032)

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.



Aradi teaches adding a manganese compound to coal (see abstract; paragraph 0017 and 0038). The manganese compound may be a sulfonate, phenate or methylcyclopentadienyl manganese tricarbonyl and the fuel is coal (see paragraphs 12 and 17). Aradi teaches using from 2-200 ppm of manganese. Aradi teaches that the catalyst and manganese compounds promote carbon burnout in combustion particulate by-products such as soot (carbon) and smoke and control CO and NO<sub>x</sub> emissions (see paragraph 29). Aradi also teaches a method wherein carbon-containing fly ash is produced and the amount of carbon produce is reduced (claim 10).

Accordingly, Aradi teaching all the limitations of the claims anticipates the claims.

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1-3, 8-9 and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rolfe (US 3,443,916)..

Rolfe teaches a manganese-amine complex that is added to coal. Upon combustion of the coal, noxious fumes and smoke are reduced (CO, NO<sub>x</sub> and carbon particles) (see abstract; col. 2, lines 61-69). Rolfe adds 8-15 ppm of the manganese compound to coal (see col. 6, lines 27-35). The manganese complex may be a manganese-amine carboxylate (see col. 6, lines 39-69).

Rolfe teaching all the limitations of the claims other than the claims at least 20 ppm of the manganese compound. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the amount of manganese through routine experimentation for the best results. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the *prima facie* case of obviousness. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

17. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues that an inherent feature or result must be consistent, necessary, and inevitable, not merely possible or probable. Applicant submits that none of the references inherently anticipate the claimed invention.

The examiner respectfully disagrees. Zamansky, Kerley and Aradi teach the same process steps of adding the manganese-containing compound to coal and combusting the mixture in a combustion chamber. Therefore, the results are consistent, necessary and inevitable.

Applicant argues that Zamansky does not contain an example wherein manganese is used. Applicant argues that Zamansky fails to teach reducing carbon in ash or reduction in carbon monoxide.

Zamansky teaches and claims manganese as a metal that may be combined with the coal. Zamansky teaches the same method steps as set forth in the present claims. Zamansky teaches a reduction in  $\text{NO}_x$ . Given all of these facts, the examiner maintains that Zamansky inherently teaches the reduction of carbon in ash and the reduction of carbon monoxide.

Applicant argues that there is no teaching in Rolfe of reduction in carbon in ash or the claimed 20 ppm of the manganese compounds.

Rolfe teaches that adding 8-15 ppm of the manganese compound to coal and combusting the coal produces a reduction in the amount of CO,  $\text{NO}_x$ , and carbon particles in the combustion chamber. While Rolfe is silent with respect to the claimed amount, it would have been obvious to one of ordinary skill in the art to optimize the proportions. While Applicant argues that it is a significant difference between 15 ppm and 20 ppm, it is the examiner's position that the values are close enough that one skilled in the art would have expected the same results regardless of which amount is used.

Applicant argues that Kerley does not discuss reduction of carbon in ash,  $\text{NO}_x$ , or carbon monoxide. Applicant argues that Kerley exemplifies a treat rate of less than 6 ppm of manganese in the coal. Applicant argues that this amount is substantially less than what is now being claimed.

Kerley teaches the same method steps as set forth in the claims. He teaches that 5-50,000 ppm of manganese methylcyclopentadienyl tricarbonyl may be added to the coal. Given these teachings, Kerley clearly meets the requirements for anticipating

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the claimed method. With respect to the example, it is well settled that a reference is relied upon for all that it teaches and it not limited to the examples therein. Kerley is not limited to the examples set forth in his disclosure.

Applicant argues that Aradi does not teach the reduction of NO<sub>x</sub>, carbon in ash, or carbon monoxide but instead teaches inhibition of low and high temperature corrosion in various furnace systems.

The examiner respectfully disagrees. Aradi teaches in paragraph 0029 that the catalyst control CO and NO<sub>x</sub> emissions, and in claim 10 Aradi teaches reduced carbon in the fly ash.

Applicant argues that there is not actual example of the use of manganese with the combustion of coal.

Aradi teaches that manganese may be added to coal and he teaches that the catalyst and manganese promote carbon burnout in combustion particulate by-products such as soot (carbon) and smoke and control CO and NO<sub>x</sub> emissions (see paragraph 29). It is well settled that a reference is to be considered for all that it teaches and is not limited to the examples therein.

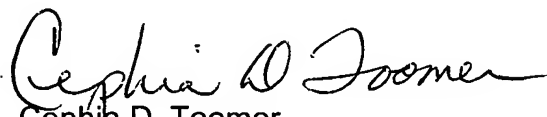
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Cephia D. Toomer  
Primary Examiner  
Art Unit 1714

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